

*Ex parte Franklin et al. LHB*

THIS OPINION WAS NOT WRITTEN FOR PUBLICATION

The opinion in support of the decision being entered today (1) was not written for publication in a law journal and (2) is not binding precedent of the Board.

Paper No. 32

94-3462  
UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

*Ex parte* JAMES FRANKLIN  
and FRANCINE JANSSES

Appeal No. 94-3462  
Application 08/013,255<sup>1</sup>

ON BRIEF

**MAILED**

FEB 06 1996

**PAT.&T.M.OFFICE  
BOARD OF PATENT APPEALS  
AND INTERFERENCES**

Before KIMLIN, PAK, and OWENS, Administrative Patent Judges.

OWENS, Administrative Patent Judge.

**DECISION ON APPEAL**

This appeal is from the primary examiner's rejection of claims 1-6, all of the claims pending in the application.

<sup>1</sup>Application for patent filed February 3, 1993. According to appellants, the application is a continuation of Application 07/866,970, filed April 7, 1992, now abandoned, which is a continuation of Application 07/702,361, filed May 15, 1991, now abandoned, which is a continuation of Application 07/353,959, filed May 18, 1989, now abandoned.

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Claim 1 is illustrative and reads as follows:

1. Process for the preparation of chlorinated derivatives of pyridine compounds by a substitutive chlorination reaction of the corresponding pyridine compounds by means of molecular chlorine in the presence of a free radical initiator in the gaseous phase, characterized in that the free radical initiator used is bis(trichloromethyl)sulfone.

#### THE REFERENCES

Erwin Klingsberg (Klingsberg), *Pyridine and Its Derivatives Part One*, 2-3 (New York, Interscience Publishers, 1960).

W. Dorrepaal and R. Louw (Dorrepaal), "Induced Vapour Phase Chlorination of Arenes at About 200°C," 90 *Recueil* 700-04 (1971).

#### THE REJECTION

Claims 1-6 stand rejected under 35 U.S.C. § 103 as being unpatentable over Dorrepaal in view of Klingsberg.

#### OPINION

We have carefully considered all of the arguments advanced by appellants and the examiner and agree with the examiner that claims 1-5 would have been obvious to one of ordinary skill in the art within the meaning of 35 U.S.C. § 103 over Dorrepaal in view of Klingsberg. Accordingly, the aforementioned rejection of those claims will be affirmed. However, we agree with appellants that the examiner's rejection

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of claim 6 is untenable. Hence, we will not sustain the rejection of that claim.

Appellants' claimed invention is a process for making chlorinated derivatives of pyridine compounds, particularly 2,6-dichloropyridine, by molecular chlorination of pyridine compounds in the gaseous phase in the presence of bis(trichloromethyl)sulfone as a free radical initiator (specification, pages 1 and 4).

Dorrepaal discloses molecular chlorination of arenes (benzene, chloro-benzene, and benzonitrile) in the gaseous phase in the presence of bis(trichloromethyl)sulfone as a free radical initiator (pages 701 and 703). The process differs from appellants' process in that the compounds chlorinated are arenes instead of pyridine compounds.

To supply the teaching which Dorrepaal lacks, the examiner applied Klingsberg, which discloses that some chemical properties of pyridine are roughly parallel to those of benzene, modified in some degree by the presence of the nitrogen in the ring. Klingsberg teaches that these properties include electrophilic substitution reactions such as halogenation, which are more difficult than with benzene. Klingsberg further teaches that the behavior of pyridine ring substituents follows the

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pattern in benzene, with the greatest divergence in 2 and 4 substituted pyridines (page 3).

The examiner's position is that given the equivalence of benzene and pyridine as taught by Klingsberg, one of ordinary skill in the art would have been motivated to substitute pyridine for the aromatic reactant in the Dorrepaal process (answer, page 4).

Appellants argue that the references fail to suggest the desirability of combining their teachings and at best would show that it was obvious to try appellants' process. Appellants point out that Dorrepaal discloses relatively low yields and conversions even after long residence times. Therefore, appellants maintain, one of ordinary skill in the art, who was attempting to achieve a practicably useful route to chlorinated compounds, would not have been inspired by the Dorrepaal disclosure to experiment further even with benzene derivatives, much less to try to develop an effective process for chlorinating pyridine compounds (brief, pages 3-5).

References on which an obviousness rejection is based need not suggest a practicable process. As stated by the Court of Customs and Patent Appeals in *In re Aller*, 220 F.2d 454, 458-59, 105 USPQ 233, 237 (CCPA 1955):

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Appellants suggest that the decision to experiment with the process in the first place involves invention, apparently on the theory that the process as disclosed by Hock and Lang appeared so impractical that no skilled chemist would have experimented with it. References have always been valid for what they would convey, explicitly or implicitly, to one skilled in the art. That experimentation may not have appeared promising is of no importance. It has been held that a reference may be valid even though it states in so many words that its disclosure is not practical. (citations omitted)

What is required for establishing a *prima facie* case of obviousness is a showing that the prior art would have suggested to those of ordinary skill in the art that they should carry out the claimed process, and that the prior art would have revealed that in carrying out the process, those of ordinary skill in the art would have had a reasonable expectation of success. *In re Vaeck*, 947 F.2d 488, 493, 20 USPQ2d 1438, 1442 (Fed. Cir. 1991).

Appellants acknowledge that uses for chlorinated pyridine compounds were known in the art (specification, page 5, lines 1-5).<sup>2</sup> Hence, those of ordinary skill in the art would have been motivated to make chlorinated pyridine compounds for

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<sup>2</sup>It is axiomatic that consideration of the prior art cited by the examiner must, of necessity, include consideration of the admitted state of the art found in the specification. *In re Hedges*, 783 F.2d 1038, 228 USPQ 685 (Fed. Cir. 1986); *In re Davis*, 305 F.2d 501, 134 USPQ 256 (CCPA 1962); *Aktiebolaget Karlstads Mekaniska Werkstad v. United States International Trade Commission*, 705 F.2d 1565, 217 USPQ 865 (Fed. Cir. 1983).

such known uses. Klingsberg's teaching that halogenation of pyridine is more difficult than halogenation of benzene (page 3) would have indicated to one of ordinary skill in the art that pyridine as well as benzene can be halogenated, only with more difficulty. Thus, one of ordinary skill in the art would have had a reasonable expectation that the Dorrepaal process for halogenating benzene would have been effective for halogenating pyridine. We have considered appellants' statement that catalysis is unpredictable (brief, page 5), but find, in view of the known similarities between the reactive behavior of benzene and pyridine as discussed above, that the teaching by Dorrepaal that bis(trichloromethyl)sulfone is an effective free radical initiator for the chlorination of benzene would have provided one of ordinary skill in the art with a reasonable expectation that bis(trichloromethyl)sulfone would function effectively as a free radical initiator for the chlorination of pyridine..

For the above reasons, we find that appellants' claims 1-6 would have been *prima facie* obvious to one of ordinary skill in the art over Dorrepaal in view of Klingsberg.

Appellants argue that even if the claimed process would have been *prima facie* obvious to one of ordinary skill in the art, such *prima facie* obviousness is overcome by appellants' evidence of unexpected results. This evidence was presented in

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appellants' specification and discussed in a declaration (filed August 13, 1993) by Dr. James Franklin, one of the inventors. The entire Franklin declaration is directed toward the production of 2,6-dichloropyridine.

Dr. Franklin argues (declaration, item 11) that the comparison in appellants' specification of the production of 2,6-dichloropyridine using a bis(trichloromethyl)sulfone free radical initiator in Examples 1, 4 and 5, versus production of the same compound using a di-tert-butyl peroxide free radical initiator at the same conditions except for a longer residence time (10 seconds versus 5 seconds) in Example 2R, indicates that appellants' process produces unexpected results.<sup>3</sup> Example 1 shows that 2,6-dichloropyridine was produced according to appellants' process at a 78 mole% yield and at a pyridine conversion close to 100%. In Example 2R, the yield of 2,6-dichloropyridine was 14 mole% and the conversion of pyridine was 70%.

In addition to discussing the experimental results, Dr. Franklin states (declaration, item 4) that the invention relates

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<sup>3</sup>In appellants' Example 2R, all parameters and conditions were identical to those in Example 1 except di-t-butyl peroxide was used as the free radical initiator instead of bis-(trichloromethyl)sulfone, and the residence time was 10 seconds instead of 5 seconds. In Examples 4 and 5, lower ratios of bis(trichloromethyl)sulfone free radical initiator to pyridine were used than in Example 1.

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to the discovery that bis(trichloromethyl)sulfone is a highly effective initiator for the rapid and high-yield preparation of 2,6-dichloropyridine by reaction of pyridine with molecular chlorine in the gas phase. Dr. Franklin criticizes the Dorrepaal and Klingsberg references on the ground that they do not relate to forming dichlorinated products. That is, Dr. Franklin says (declaration, item 7) that the Dorrepaal process forms predominantly mono-chlorinated benzene derivatives, and is not relevant to the rapid production of high yields of 2,6-dichloropyridine. Regarding Klingsberg, Dr. Franklin says (declaration, item 8) that no teaching of the selective production of dichlorinated derivatives is presented. Dr. Franklin states (declaration, item 11) that the rapid, high yield production of 2,6-dichloropyridine by appellants' process is unexpected.

We consider appellants' comparison of producing 2,6-dichloropyridine by appellants' process using a bis-(trichloromethyl)sulfone initiator, versus making the same compound at the same conditions (except for a 10 second rather than a 5 second residence time) using an organic peroxide initiator as was known in the prior art, to provide probative evidence that appellants' process produces unexpected results as to the production of 2,6-dichloropyridine. Consequently, we find



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the declaration to be effective for overcoming the *prima facie* case of obviousness of claim 6 which is directed toward the production of 2,6-dichloropyridine. Accordingly, the rejection of that claim will be reversed.

However, we do not consider the Franklin declaration to be sufficient for overcoming the *prima facie* case of obviousness of claims 1-5 because the evidence discussed therein is not commensurate in scope with these claims. *In re Boesch*, 617 F.2d 272, 277, 205 USPQ 215, 220 (CCPA 1980); *In re Lindner*, 457 F.2d 506, 508, 173 USPQ 356, 358 (CCPA 1972). Appellants' claims 1-5 are not limited to the production of 2,6-dichloropyridine, but pertain to the production of chlorinated pyridines generally. Klingsberg teaches that the greatest divergence between the behavior of ring substituents of the pyridine system and benzene system occurs in 2 and 4 substituted pyridines (page 3). In view of this indication that the behavior of substituted pyridines can depend on the site of substitution, there is no reason to believe that conclusions based on appellants' experiments in which 2,6-dichloropyridine was produced would extend to the production of chlorinated pyridines which are not substituted at the 2 position or which are substituted at the 4 position. We therefore will sustain the rejection of claims 1-5.

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### DECISION

The rejection of claims 1-5 under 35 U.S.C. § 103 as being unpatentable over Dorrepaal in view of Klingsberg is affirmed. The rejection of claim 6 under 35 U.S.C. § 103 as being unpatentable over Dorrepaal in view of Klingsberg is reversed.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 CFR § 1.136(a).

AFFIRMED-IN-PART

Edward C. Kimlin  
EDWARD C. KIMLIN )  
Administrative Patent Judge )

CHUNG K. PAK )  
Administrative Patent Judge )

TERRY J. OWENS )  
Administrative Patent Judge )

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Charles R. Reeves  
Bank One Center/Tower  
111 Monument Circle  
Suite 3700  
Indianapolis, IN 46204-5137